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CONTRIBUTIONS TO THE KNOWLEDGE OF CORMOPHYTAE FLORA IN THE BERZUNȚI MOUNTAINS AREA, BACĂU COUNTY (1)

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INTRODUCTION

The Berzunți Mountains area studied by us stretches on 140 km^2 of which approximately 50% is covered with forest vegetation, 20% with meadows, of which 15% pastures and 5% hay fields, the rest being occupied by agricultural fields, urban zones and access roads (11). The Berzunți Mountains are completely included in the administrative area of Bacău County, in the village areas: Berzunți, Poduri, Dofteana and Bârsăneşti and the vicinities of Dărmăneşti and Târgu-Ocna towns. These mountains have the following borders: to the north Tarcău Mountains, to the east Dărmăneşti Depression, to the west and south Tazlău Subcarpathians.

The relief of Berzunți Mountains: These mountains have a massive appearance and clearly dominate both the Dărmăneşti Depression from the west and the Tazlău Depression from the east. The central axis maintains over 800 m (the following summits: Tarnița – 892 m, Vârful lui Crăciun – 896 m, Beldiman – 978 m and Măgura – 984 m). From a geological point of view, the Berzunți Mountains belong to the Vrancea tectonic unit (35).

Deposits belonging to Cretacic, Paleogene and early Miocene take part in the making of Vrancea tectonic unit. Soils are distributed in various layers: *luvisoils* which occupy the low third of mountainous slopes in the eastern side of Berzunți Ridge, including the preluvisoil and luvisoil and *cambisoils* which occupy the middle and upper mountainous slopes including the eutricambisoil and districambisoil.

The hydrographical network has tributaries of Trotuş River in the Dărmăneşti Depression such as the following streams: Plopu, Hemeiuşul, Runcu and Pârâul lui Nicoliță. The tributaries of Trotuş River in the Subcarpathian depression are: Cernu (with Buda and Păltinişu), Berzunți (with Butucari and Puşcaşu), Albele, Bârsăneşti and Caraclău. The climate is specific to the area of hills and plateaus, more specific to the climate district of eastern Subcarpathians. The medium annual temperature varies depending on altitude and exposition between 5˚ and 8˚ C. The medium annual precipitations surpass 700 mm on the main ridge and vary between 600 and 700 mm on lower slopes (2, 6, 28).

MATERIAL AND METHODS

The botanical material which is the topic of this paper was taken from the collecting points mentioned below. The observations and the collections of floristical material were made during 2008-2009 along the entire vegetation period. The collected vegetal material was pressed and dried in order to be introduced in the collections of Natural Science Museum „Ion Borcea", Bacău.

The floristical material collected in the field was analysed on the basis of information in the specialty bibliography (1, 3, 4, 7, 12, 19-27, 31-34, 36-40). The families in the conspect of vascular flora were mentioned in a systematical order, the genera of each family are alphabetically written, also the species in the genera.

The nomenclature was used according to Chifu et all (9). The conspect of vascular flora comprizes a series of useful information presented as following: the scientific name of the species and the author; the distribution (species mentioned in the bibliography are written with bold fonts, then those found in the field with simple fonts using the toponimical code of the paper).

Abbreviations: C = common (more than 10 toponyms); D = distribution; Cult = Cultivated
Toponimical codes used in the paper: 1 Berzunți: 1a – Dealul Pipirigului, 1b – Dealul Berzunți; 1c – Creasta Berzunțului, 1d – Dealul Măgura; 2 Brăteşti – Bârsăneşti: 2a – Dealul Osoiului, 2b – Dealul Praghilei; 3 Buda – Berzunți: 3a – Vâful Bulimandru; 4 Cucuieți – Dofteana: 4a – Plaiul Lunca Mare, 4b – Dealul Ursoaia; 5 Dragomir – Berzunți; 6 Larga – Dofteana: 6a – Plaiul Stogului, 6b – Plaiul Plopatului; 7 Mănăstirea Sfântu Sava;. 8

Păgubeni – Dărmăneşti; 9 Plopu – Dărmăneşti; 10 Poieni – Târgu Ocna: 10a – Dealul Drăcoaia; 11 Schitul Sfântul Ilie; 12 Vâlcele – Târgu Ocna: 12a – Dealul Chiciria, 12b – Vârful Muncelu, 12c – Dealul Corniculuí; 13 Valea Şoşii – Poduri: 13a – Plaiul Savului; 14 Vermeşti – Comăneşti: 14a – Vârful Tarnița.

RESULTS AND DISCUSSIONS

The floristical conspect:

PTERIDOPHYTA: FAM. LYCOPODIACEAE: ***Lycopodium selago*** L., D.: 1c; **FAM. EQUISETACEAE:** ***Equisetum arvense*** L., D.: C; ***Equisetum palustre*** L. D.: 16, 8, 9; ***Equisetum sylvaticum*** L., D.: 1c, 11; ***Equisetum telmateia*** Ehrh.; D.: **33**, C; **FAM. POLYPODIACEAE**; ***Polypodium vulgare*** L., D.: **33,** 10a; **FAM. PTERIDIACEAE:** ***Pteridium aquilinum*** (L.) Kuhn, D.: **33, 5, 26**, C; **FAM. ASPLENIACEAE:** ***Asplenium septentrionale*** (L.) Hoffm., D.: **14, 38, 16, 26**, 10a; **FAM. ATHYRIACEAE:** ***Athyrium filix-femina*** (L.) Roth, D.: **33, 26,** 1a, 1c, 3a, 6b, 11, 14a**;** ***Cystopteris fragilis*** (L.) Bernh, D.:1d, 14a; **FAM. ASPIDIACEAE:** ***Dryopteris dilatata*** (Hoffman) A. Gray, D.: **33**, 1c, 7; ***Dryopteris filix-mas*** (L.) Schott, D.: **33, 5,** C; ***Gymnocarpium dryopteris*** (L.) New, D.: **33**, 1c, 6b, 13a; **PINOPHYTA (Gymnospermatophyta): FAM. PINACEAE:** ***Abies alba*** Mill., D.: **9** cult., 1a, 3a, 4b, 6b; ***Picea abies*** (L.) Karsten., D.: **33**, C; ***Pinus sylvestris*** L., D.: **33**, 3a, 4b, 10a, 11; **FAM. TAXACEAE:** ***Taxus baccata*** L., D.: cult. **MAGNOLIOPHYTA (*Angiospermatophyta*): MAGNOLIATAE (DICOTILEDONATAE): FAM. RANUNCULACEAE:** ***Aconitum moldavicum*** Hacq., D.: **38;** ***Aconitum toxicum*** Reichenb., D.: cult., 1, 3, 7; ***Actaea spicata*** L., D.: **32**, **5**, 3a, 7, 10, 11, 14a; ***Adonis vernalis*** L., D.: 2a.; ***Anemone nemorosa*** L.; D.: **26, 33**, C; ***Anemone ranunculoides*** L., D.: **5**, C; ***Caltha palustris*** L., D.: 1c, 4a, 7, 11, 14; ***Clematis alpina*** (L.) Miller, D.: 3a, 12b; ***Clematis vitalba*** L., D.: **26, 5, 33,** C; ***Consolida regalis*** S. F. Gray., D.: 2, 12; ***Isopyrum thalictroides*** L., D.: **26**, 2b, 9; 1a, 2a, 7, 10a; ***Nigella arvensis*** L., D.: 2, 12; ***Ranunculus acer*** L., D.: **33, 8,** C; ***Ranunculus auricomus*** L., D.: **26,** 1a**,** 2a, 3a, 6a, 6b, 12a; ***Ranunculus ficaria*** L., D.: C; ***Ranunculus polyanthemos*** L., D.: **5** ***Ranunculus repens*** L., D.: **33,** C; ***Ranunculus sardous*** Crantz., D.: **8**, 1d, 2b, 7, 13; ***Ranunculus strigulosus*** Schur., D.: **5**, 2a, 4a, 8, 12c, 13; ***Thalictrum aquilegiifolium*** L., D.: 6b, 9; ***Thalictrum minus*** L.; D.: 12c; **FAM. PAPAVERACEAE:** ***Chelidonium majus*** L., D.: C; ***Papaver rhoeas*** L., D.: **5**, 4; **FAM. FUMARIACEAE:** ***Corydalis cava*** (L.) Schweigg. et Koerte, D.: **26,** 10a, 12c; ***Corydalis solida*** (L.) Clairv., D.: **5;** ***Fumaria rostellata*** Knaf, D.: 1b; **FAM. ULMACEAE:** ***Ulmus glabra*** Hudson, D.: 1d; **FAM. MORACEAE:** ***Morus alba*** L., D.: cult.; **FAM. CANNABACEAE:** ***Humulus lupulus*** L., D.: 1a, 1b, 1c, 2b, 12 b; **FAM. URTICACEAE:*****Urtica dioica*** L.; D.: C; ***Urtica urens*** L., D.: C; **FAM. FAGACEAE:** ***Fagus sylvatica*** ssp. ***sylvatica*** L., D.: **33, 5, 26,** C; ***Quercus petraea*** (Mattuschka) Liebl., D.: 1d, 2a, 9, 10a; ***Quercus robur*** L., D.: C; **FAM. BETULACEAE:** ***Alnus glutinosa*** (L.) Gaertner, D.: **15, 5, 26**, C; ***Alnus incana*** Moench, D.: **26,** C; ***Betula pendula*** Roth.,D.: **5, 26,** C; **FAM. CORYLACEAE:** ***Carpinus betulus*** L., D.: **5, 26**, C; ***Corylus avellana*** L., D.: C; **FAM. PHYTOLACCACEAE:** ***Phytolacca americana*** L., D.: cult. 1, 7, 12; **FAM. PORTULACCACEAE:** ***Portulacca olearacea*** L, D: 10, 12; **FAM. CARYOPHYLLACEAE:** ***Arenaria serpyllifolia*** L., D.: **26**, 1b, 2a, 3, 5, 8, 11, 12b, 12c; ***Cerastium caespitosum*** Gilib., D.: **33, 8, 5**, C; ***Cerastium fontanum*** Baumg., D.: C; ***Cerastium glomeratum*** Thuill., D.: 3, 7, 9; ***Cucubalus baccifer*** L., D.: **5,** 8; ***Dianthus armeria*** L. , D.: **33;** C; ***Dianthus cartusianorum*** L., D.: **5**, 3a, 4c, 6a, 6b, 13a; ***Holosteum umbellatum*** L., D.: 1a, 2a, 4a, 7, 13; ***Lychnis flos-cuculi*** L., D.: **33, 5**, 2b, 8, 14a; ***Moehringia trinervia*** (L.) Clairv., D.: **33, 5**, 1b, 2a, 2b, 4b, 7, 9, 12c; ***Sagina procumbens*** L., D.: 3, 9; ***Saponaria officinalis*** L., D.: **5,** 1c, 3, 10; ***Scleranthus annuus*** L., D.: **33;** ***Silene alba*** (Miller) E. H. L. Krause, D.: **5**, 7, 9, 12a; ***Silene dubia*** Herb., D.: **33, 26;** 2b, 12c; ***Silene nutans*** L., D.: **33, 5**, 8; ***Silene otites*** (L.) Wibel., D.: 8; ***Silene vulgaris*** (Moench.), Garke, D.: 2b, 14; ***Stellaria aquatica*** (L.) Scop, D.: **33;** ***Stellaria graminea*** L., D.: **33, 5, 26,** C; ***Stellaria holostea*** L., D.: **33, 5, 26,** C; ***Stellaria media*** (L.) Vill.,D.: **33,** C; ***Stellaria nemorum*** L., D.: 3a, 4a, 7, 10a, 11; ***Viscaria vulgaris*** Bernh., D.: **33, 5, 26; FAM. AMARANTHACEAE:** ***Amaranthus albus*** L., D.: 2, 4, 6, 10; ***Amaranthus blitoides*** S. Watson, D.: 10; ***Amaranthus crispus*** (Lesp. et. Thév.) Terrace, D.: 12; ***Amaranthus hypocondriacus*** L., D.: C în culturi; ***Amaranthus retroflexus*** L., D.: **33**, C în cultură; **FAM. CHENOPODIACEAE:** ***Atriplex hortensis*** L., D.: cult.: 1; ***Atriplex litoralis*** L., D.: **26;** ***Atriplex oblongifolia*** Walds. et Kit., D.: C; ***Atriplex patula*** L., D.: 8, 12; ***Atriplex tatarica*** L., D.: C; ***Chenopodium album*** L., D.: C; ***Chenopodium bonus-henricus*** L., D.: 3a, 7, 11; ***Chenopodium glaucum*** L., D.: 2, 6, 8, 9, 12; ***Chenopodium hibridum*** L., D.: 1, 2, 3, 7, 10; ***Chenopodium polyspermum*** L., D.: 4, 6, 12; ***Chenopodium rubrum*** L., D.: 13; ***Chenopodium urbicum*** L., D.: 4, 6, 10, 12; **FAM. POLYGONACEAE:** ***Bilderdykia dumetorum*** (L.) Dumort.; ***Polygonum amphibium*** L., D.: **26;** ***Polygonum aviculare*** L., D.: **8,** C; ***Polygonum lapathifolium*** L., D.: **5**, C; ***Polygonum persicaria***

L., D.: **33**, 6a, 7, 13a, 14a; ***Rumex acetosa*** L., D.: **5**, 6a, 9, 14a; ***Rumex acetosella*** L., D.: **8, 5**, C; ***Rumex crispus*** L., D.: **8, 5**, C; ***Rumex obtusifolius*** L., D.: **5**, 1c, 3, 6a; ***Rumex patientia*** L., D.: 1, 7, 12b, 14; ***Rumex sanguineus*** L., D.: **33,** C; **FAM. CRASSULACEAE:** ***Sedum acre*** L., D.: 10a; ***Sedum maximum*** (L.) Hoffm., D.: **33; FAM. SAXIFRAGACEAE:** ***Chrysosplenium alternifolium*** L., D.: **5, 33,** 7; **FAM. ROSACEAE:** ***Agrimonia eupatoria*** L., D.: C; ***Crataegus monogyna*** Jacq, D.: C; ***Filipendula ulmaria*** (L.) Maxim., D.: **5,** 1d, 3, 5, 12c; ***Fragaria vesca*** L., D.: **33, 5**, C; ***Geum urbanum*** L., D.: **33, 26,** 1a, 2a, 4a, 6a, 9, 12c; ***Malus sylvestris*** (L.) Miller; ***Potentilla argentea*** L., D.: **33, 8, 5;** ***Potentilla anserina*** L., D.: **5,** C; ***Potentilla erecta*** (L.) Räuschel; D.: **33, 5, 26;** ***Potentilla reptans*** L., D.: **33, 5;** ***Prunus avium*** L., D.: C; ***Prunus spinosa*** L., D.: **5,** C; ***Pyrus pyraster*** (L.) Burgsd., D.: 2b, 12a, 13a; ***Rosa canina*** L., D.: **33, 5, 26**, C; ***Rosa pendulina*** L., D.: **33;** ***Rubus bifrons*** West ex Tratt, D.: **33;** ***Rubus caesius*** L., D.: C; ***Rubus hirtus*** W et K., D.: **33;** ***Rubus idaeus*** L., D.: **26,** 3a, 14a; ***Sorbus aucuparia*** L., D.: 10, 14a; ***Sorbus torminalis*** (L.) Crantz, D.: **33; FAM. FABACEAE:** ***Amorpha fruticosa*** L., D.: 4 cult.; ***Anthyllis vulneraria*** L., D.: 6a, 7, 8, 12; ***Astragalus glycyphyllos*** L., D.: **33**, 6a; ***Astragalus onobrychis*** L., D.: **33**, **5**, 10a, 4b, 5, 7; ***Coronilla varia*** L., D.: **8, 33, 5;** ***Cytisus nigricans*** L., D.: 2a, 4b; ***Dorycnium herbaceum*** Vill., D.: **5, 33**, 2a, 3, 6, 12, 14; ***Genista tinctoria*** L., D.: **33, 5,** 4b, 13; ***Lathyrus aureus*** (Steven) Brandza, D.: **33;** ***Lathyrus niger*** (L.) Bernh.; ***Lathyrus pratensis*** L., D.: **5**, 7; ***Lathyrus tuberosus*** L., D.: **33, 5,** 1c, 2b, 7, 9; ***Lathyrus venetus*** (Miller) Wohlf., D.: **33;** ***Lathyrus vernus*** (L.) Bernh., D.: **5, 26**, 3, 6a; ***Lembotropis nigricans*** (L.) Griseb., D.: C; ***Lotus corniculatus*** L., D.: **61, 5**, C; ***Medicago falcata*** L., D.: **8, 33, 5**, 1a, 2a, 4a, 13; ***Medicago lupulina*** L., D.: **33**, 1a, 1b, 1c, 2a, 4a, 5, 7, 12a, 12c; ***Medicago minima*** (L.), D.: 1c; ***Medicago sativa*** L., D.: C cult; ***Melilotus albus*** Medicus, D.: 1a, 1b, 1c, 2a, 4a, 5, 7, 9, 10a; ***Melilotus officinalis*** Lam., D.: **33, 5**, 1a, 1b, 2b, 5, 11; ***Onobrychis viciifolia*** Scop., D.: **5,** C; ***Ononis hircina*** Jacq., D.: **33, 5, 8,** 2a, 3, 6a; ***Robinia pseudoacacia*** L., D.: **5,** C cult.; ***Trifolium alpestre*** L., D.: 1c, 6b, 12c; ***Trifolium arvense*** L., D.: **33, 8, 26,** 3, 5, 13; ***Trifolium campestre*** Schreber, D.: **8, 5**, 2a, 2b, 4a, 10a, 12c; ***Trifolium hybridum*** L., D.: **8, 5;** ***Trifolium medium*** L., D.: **33, 5, 26;** ***Trifolium montanum*** L., D.: **33, 8, 5**, 7; ***Trifolium ochroleucum*** Huds.; D.: **33, 8,** 6a, 11; ***Trifolium pannonicum*** Jacq., D.: **33, 5;** ***Trifolium pratense*** ssp. *pratense* L., D.: **8, 33,** C; ***Trifolium repens*** L., D.: **8, 5**, C; ***Trifolium strepens*** Crantz, D.: **33;** ***Vicia cracca*** L., D.: 1b, 1c, 2a, 5, 7, 9, 11, 13a, 14; ***Vicia pannonica*** Crantz, D.: **33, 5;** ***Vicia pisiformis*** (Schur), D.: **33;** ***Vicia sylvatica*** L., D.: **33, 26;** ***Vicia tetrasperma*** (L.) Schreber, D.: **8;** ***Vicia villosa*** Roth., D.: **5; FAM. HALORAGACEAE:** ***Myriophyllum spicatum*** L, D.: **26; FAM. LYTHRACEAE:** ***Lythrum salicaria*** L., D.: **26;** ***Lythrum virgatum*** L., D.: 2, 6; **FAM. ONAGRACEAE (OENOTHRACEAE):** ***Circaea lutetiana*** L., D.: **33, 5, 26**, C; ***Epilobium angustifolium*** L., D.: C; ***Epilobium hirsutum*** L.; D.: 1d, 2a, 4a, 7, 10, 11, 13a; ***Epilobium palustre*** L., D.: 2, 5, 12; ***Oenothera biennis*** L., D.: **33,** 3, 7, 14, cult. as ornamental; **FAM. CORNACEAE:** ***Cornus mas*** L., D.: **5,** C; ***Cornus sanguinea*** L., D.: **26, 5**, C cult.; **FAM. LORANTHACEAE:** ***Viscum album*** L., D.: **5; FAM. CELASTRACEAE:** ***Evonimus verrucosa*** Scop., D.: 2a; **FAM. EUPHORBIACEAE:** ***Euphorbia amygdaloides*** L.; D.: **5**, C; ***Euphorbia carniolica*** Jacq., D.: **33;** ***Euphorbia cyparisias*** L., D.: **5, 8**, C; ***Euphorbia plathyphyllos*** L., D.: **33;** ***Euphorbia serrulata*** Thuill., D.: **33;** ***Mercurialis perennis*** L., D.: **33, 5; FAM. VITACEAE:** ***Parthenocisus quinquefolia*** (L.): Cult.; **FAM. ACERACEAE:** ***Acer campestre*** L.,D.: **26, 33;** ***Acer negundo*** L., D.: cult.; ***Acer pseudoplatanus*** L., D.: **33, 5,** 6a, 11, 13a, 14a; ***Acer tataricum*** L., D.: 2a, 12c; **FAM. SIMAROUBACEAE:** ***Ailanthus altissima*** (Miller) Swingle, D.: cult: 1, 9; **FAM. OXALIDACEAE:** ***Oxalis acetosella*** L., D.: **33, 5**, C; ***Oxalis corniculata*** L**.**, D.: 1, 10, 12; **FAM. GERANIACEAE:** ***Erodium cicutarium*** (L.) L'Hér., D.: C; ***Geranium phaeum*** L., D.: 1d, 2b, 4b, 6b, 14a; ***Geranium pusillum*** Burm. fil.- Buchet, D.: **5,** 2, 5, 7, 8; ***Geranium robertianum*** L., D.: C; ***Geranium sanguineum*** L., D.: **5; FAM. BALSAMINACEAE:** ***Impatiens noli-tangere*** L., D.: **33, 26**, C; **FAM. LINACEAE:** ***Linum austriacum*** L., D.: **5;** ***Linum catharticum*** L., D.: **5, 33**, 1b, 3a, 6a, 6b, 10a; ***Linum perenne*** L., D.: **8,** C; **FAM. POLYGALACEAE:** ***Polygala amara*** L., D.: **5**, 2b, 5; ***Polygala comosa*** Schkuhr, D.: **33,** C; ***Polygala vulgaris*** L., D.: **33,** C; **FAM. ARALIACEAE:** ***Hedera helix*** L., D.: **5,** 1d, 3a, 6b, 10a, 14a; **FAM. APIACEAE (UMBELLIFERAE)** ***Aegopodium podagraria*** L., D.: **33, 32, 5, 26**, C; ***Astrantia major*** L., D.: 6, 7, 14; ***Bupleurum falcatum*** L., D.: 3a, 6b, 7; ***Carum carvi*** L., D.: **33, 8, 5,** C; ***Chaerophyllum aromaticum*** L., D.: 7, 14; ***Chaerophyllum bulbosum*** L., D.: 2, 3; ***Cicuta virosa*** L., D.: 1, 6, 12; ***Conium maculatum*** L., D.: C; ***Daucus carota*** ssp. *carota* L., D.: **33, 5,** C; ***Eryngium campestre*** L., D.: C; ***Eryngium planum*** L., D.: 6, 9; ***Heracleum spondylium*** L., D.: **33, 5;** ***Laserpitium latifolium*** L., D.: **26;** ***Pastinaca sativa*** L., D.: 2a, 6a, 8; ***Peucedanum cervaria*** (L.) Lapeier., D.: 2a; ***Pimpinella major*** (L.) Huds., D.: 1a, 7; ***Pimpinella saxifraga*** L., D.: **33**, 1c, 2a, 7, 13; ***Sanicula europaea*** L., D.: **33, 26**, 1b, 3a, 6b, 7, 14; ***Torilis rubella*** Moench, D.: **5, 26,** 1a, 3, 6a, 7, 11;

FAM. HYPERICACEAE: ***Hypericum elegans*** Stephan, D.: 1c, 3a, 4a, 4b, 10a, 13a; ***Hypericum maculatum*** Crantz., D.: 6b, 14a; ***Hypericum perforatum*** L., D.: **8**, C; **FAM. TILIACEAE:** ***Tilia cordata*** Mill., D.: **33, 26**, 7, 10, 12, 14; ***Tilia plathyphyllos*** Scop., D.: **33**, 1a, 3a, 7; ***Tilia tomentosa*** Moench., D.: cultivat: **FAM. MALVACEAE:** ***Althaea officinalis*** L., D.: **14;** ***Althaea rosea*** (L.) Cav., D.: 1 cult. as orn.; ***Lavathera thuringiaca*** L., D.: 1c, 3a, 4b, 7, 13a; ***Malva neglecta*** Wallr., D.: **5**, 1, 2, 4, 5, 9, 12, 14; ***Malva pusilla*** Sm., D.: 1, 3, 6, 7, 8, 9, 10, 12, 14; **FAM. VIOLACEAE:** ***Viola arvensis*** Murray, D.: **5,** C; ***Viola hirta*** L., D.: **8, 33, 5**, 1a, 1b, 2b, 4a, 7, 11, 13a; ***Viola odorata*** L., D.: **26,** 1c, 2b, 3a, 14a; ***Viola riviniana*** Rchb.., D.: **26;** ***Viola saxatilis*** Schmidt, D.: **33;** ***Viola tricolor*** L., D.: **5,** 1d, 12b, 14a; **FAM. CISTACEAE:** ***Helianthemum nummularium*** (L.) Miller., D.: **5**, 1b, 1d, 2a, 4a, 6a, 7, 10a, 13a; **FAM. BRASSICACEAE (CRUCIFERAE):** ***Alliaria petiolata*** (Bieb.) Cavara et Grande, D.: **5, 26, 33**, C; ***Alyssum alyssoides*** (L.) L., D.: **33, 5, 26,** 4, 8, 9, 10, 12; ***Arabis glabra*** (L.) Bernh., D.: 3; ***Armoracia rusticana*** P. Gaertner, D.: **5**, cult.; ***Barbarea vulgaris*** R. Br., D.: **5;** ***Berteroa incana*** (L.) D. C., D: 1c, 1d, 2a, 4a, 10; ***Bunias orientalis*** L., D.: **5**, 2, 5, 6; ***Capsella bursa-pastoris*** (L.) Medicus, D: C; ***Cardamine amara*** L., D.: **5,** 13a; ***Cardamine flexuosa*** With., D: **33;** ***Cardamine impatiens*** L., D.: **5;** ***Dentaria bulbifera*** (L.) Crantz, D.: **33, 5, 26**, C; ***Dentaria glandulosa*** Waldst. et Kit., D.: **33,** C; ***Descurainia sophia*** (L.) Webb., D.: C; ***Diplotaxis muralis*** (L.) D. C., D.: 1, 3, 7; ***Erophila verna*** (L.) Cheval., D.: C în pajişti; ***Erysimum diffusum*** Ehrh., D.: 10a; ***Lepidium campestre*** (L.) R. Br., D.: 3, 12; ***Lepidium draba*** L., D.: **5**, C; ***Lepidium ruderale*** L., D.: **5**, 2, 3, 4, 5, 8, 9, 14; ***Raphanus raphanistrum*** L., D.: **5**, 1, 5, 12; ***Rorippa austriaca*** (Crantz) Besser, D.: **5**, 1, 2, 3, 7, 8; ***Rorippa kerneri*** Menyh, D.: 14; ***Rorippa pyrenaica*** (Lam.) Rchb., D.: **5, 33;** ***Sinapis arvensis*** L., D.: C; ***Sisymbrium loeselii*** L., D.: 1, 3, 4, 8, 13; ***Sisymbrium strictissimum*** L.; ***Thlaspi arvense*** L., D.: 3, 6, 7, 14; ***Thlaspi perfoliatum*** L., D.: **33;** **FAM RESEDACEAE:** ***Reseda lutea*** L., D.: C; **FAM. SALICACEAE:** ***Populus alba*** L., D.: C; ***Populus nigra*** L., D.: 1, 4, 8, 12; ***Populus tremula*** L., D.: 1b, 1c, 3a, 4b, 10a, 14a; ***Populus x regenerata*** Henry et Elwes, D.: **33;** ***Salix alba*** L., D.: 1c; ***Salix caprea*** L., D.: **33, 5, 26,** 1c; ***Salix cinerea*** L., D.: 4a, 9; ***Salix fragilis*** L., D.: 1c; ***Salix triandra*** L.; **FAM. ERICACEAE:** ***Calluna vulgaris*** (L.) Hull, D.: **33, 5, 32,** 10a; ***Vaccinium myrtillus*** L., D.: **33, 5, 26**, 10a; **FAM. PYROLACEAE:** ***Orthilia secunda*** (L.) House: D.: **33;** ***Pyrola rotundifolia*** L., D.: **33; FAM. PRIMULACEAE:** ***Anagallis arvensis*** L., D.: **14, 32, 33, 9;** ***Lysimachia nummularia*** L., D.: **33, 5**, C; ***Lysimachia punctata*** L., D.: **5,** 1d, 6b, 9, 14a; ***Lysimachia vulgaris*** L., D.: 3a, 13a; ***Primula acaulis*** (L.) L.,D.: 2b, 6, **12;** ***Primula officinalis*** (L.) Hil., D.: **5,** C; **FAM. GENTIANACEAE:** ***Centaurium erythraea*** Rafn., D.: **33, 5**, C; ***Centaurium pulchellum*** (Swartz) Druce, D.: **33,** 1, 4, 6, 7, 12; ***Gentiana asclepiadea*** L., D.: **33,** 10a; ***Gentiana phlogifolia*** Schott et Kotschy, D.: **33,** 7; **FAM. ASCLEPIADACEAE:** ***Vincetoxicum hirundinaria*** Medikus., D.: 5, 6a, 7; **FAM. OLEACEAE:** ***Fraxinus excelsior*** L., D.: **5**, cult. 1, 2, 8, 12; ***Syringa vulgaris*** L., D.: C cult.; **FAM. SOLANACEAE:** ***Atropa belladonna*** L., D.: **33, 5**, 3a, 12b; ***Datura stramonium*** L., D.:**5**, 1, 2, 4, 10; ***Hyoschyanus niger*** L., D.:**5**, 1, 2, 4, 10; ***Lycium barbatum*** L., C cult.; ***Solanum dulcamara*** L., D.: **33, 5**, 3, 4, 8, 14a; ***Solanum nigrum*** L., D.: **5**, 1, 3, 4, 6, 12, 13; **FAM. CONVOLVULACEAE:** ***Calystegia sepium*** (L.) R. Br., D.: **5**, 4, 6, 10; ***Convolvulus arvensis*** L., D.: **33, 5**, C; **FAM. CUSCUTACEAE:** ***Cuscuta epithymum*** (L.) L., D.: **33, 5,** 1a, 2a, 2b, 8, 13; ***Cuscuta europaea*** L., D.: 3,7; **FAM. BORAGINACEAE:** ***Anchusa ochroleuca*** Bieb., D.: 2a, 2b, 12; ***Anchusa officinalis*** L., D.: **5,** 1b, 1d, 3, 5, 7, 10 a, 13; ***Asperugo procumbens*** L., D.: C; ***Cerinthe minor*** L., D.: **8**, 1a, 2a, 5, 7, 8; ***Cynoglosum officinale*** L., D.: 2a, 4a, 12a; ***Echium vulgare*** L., D.: **33, 8**, C; ***Lappula echinata*** Gilib., D.: **5,** 1, 4, 9; ***Lythospermum arvense*** L., D.: 1b, 2a, 3, 6, 8, 9, 14; ***Lythospermum purpurocaeruleum*** L., D.: 2a; ***Myosotis arvensis*** (L) Hill, D.: **5,** 1, 5,7; ***Myosotis palustris*** (L.) Hill, D.: **5, 26,** C; ***Myosotis sylvatica*** (Ehrh) Hoff., D.: **5,** 1c, 3a, 6a, 6b, 12b; ***Myosotis sparsiflora*** Mikan ex Pohl, D.: 3a,14a; ***Pulmonaria mollis*** Wulfen ex Hornem, D.: 3, 11, 13; ***Pulmonaria mollis*** Wulfen ex Hornem., D.: 10, 6b, 14; ***Pulmonaria officinalis*** L., D.: **33**, **5, 26**, 3a, 4b, 8, 9, 13; ***Symphytum officinale*** L., D.: **33,** C; ***Symphytum tuberosum*** L., D.: **26**,14a; **FAM. VERBENACEAE:** ***Verbena officinalis*** L., D.:6, 8; **FAM. LAMIACEAE:** ***Ajuga genevensis*** L., D.: 1a, 1c, 2a, 3, 4a, 6, 7, 10, 12, 14; ***Ajuga laxmannii*** (L.) Benthan, D.: 2a, 2b; ***Ajuga reptans*** L., D.: **32, 5,** C; ***Ballota nigra*** L., D.: **5**, C; ***Betonica officinalis*** L , D.: **33, 8;** ***Calamintha acinos*** (L.) Clairv., D.: **24,** C; ***Calamintha clinopodium*** Benthan, D.: **5;** ***Calamintha nepeta*** (L.) Savi, D.: **38**, 2a, 2b; ***Galeopsis ladanum*** L., D.:1b, 2a, 2b, 12, 13; ***Galeopsis tetrahit*** L., D.:1c, 6, 9; ***Glecoma hederacea*** L., D.: **33**, 1a, 1b, 1c, 3, 4a, 5, 7, 10, 12a, 14; ***Glecoma hirsuta*** W. et K., D.: **26, 5**, 1a, 1c, 1d, 2a, 2b; ***Lamium album*** L., D.: **33,** 3a,6a,6b,7,11,14a; ***Lamium amplexicaule*** L., D.: 1, 2, 5, 8, 9; ***Lamium galeobdolon*** (L.) Nath., D.: 4b, 10a; ***Lamium maculatum*** L., D.: **5, 33,** 1a, 3a, 4b, 6a, 7, 10a, 11, 14; ***Lamium purpureum*** L., D.: 1, 3, 6, 13; ***Leonurus cardiaca*** L., D.: 3, 8, 9; ***Lycopus***

europaeus L., D.: **26,** 1, 2, 5, 7, 14; ***Marrubium vulgare*** L., D.: 1a, 2a, 2b; ***Melittis melissophyllum*** L., D.: **5, 26,** 2a, 2b; ***Mentha aquatica*** L., D.: **33, 8,** 6, 13; ***Mentha longifolia*** (L.) Hudson, D.: **13,** C; ***Origanum vulgare*** L., D.: C; ***Prunella grandiflora*** (L.) Scholler, D.: **5**, 6b; ***Prunella laciniata*** (L.) L., D.: 7; ***Prunella vulgaris*** L., D. C; ***Salvia glutinosa*** L., D.: **33, 26,** C; ***Salvia nemorosa*** L., D.: 1, 2, 5, 8, 9, 12; ***Salvia pratensis*** L., D.: **5**, C; ***Salvia verticillata*** L., D.: 1, 4, 5, 10; ***Scutellaria galericulata*** L., D.: 6a, 11; ***Stachys byzantina*** C. Koch, D.: **33**, cult.in gardens; ***Stachys germanica*** L., D.: **5**, 2a, 2b; ***Stachys palustris*** L., D.: **5;** ***Stachys recta*** L., D.: C; ***Stachys silvatica*** L., D.: **26,** 3a, 6a, 12b; ***Teucrium chamaedrys*** L., D.: **33**, 2a, 2b; ***Thymus pannonicus*** All., D.: **33**, **5**, C; **FAM. PLANTAGINACEAE:** ***Plantago lanceolata*** L., D.: **33, 8, 5**, C; ***Plantago major*** L., D.: **33,** C; ***Plantago media*** L., D.: **8,** 1a, 1d, 2b, 5, 6a, 7, 10a, 12, 13, 14a; **FAM. SCROPHULARIACEAE:** ***Digitalis grandiflora*** Miller, D.: **33, 5**, 3a, 6b, 12b, 13a; ***Euphrasia rostkoviana*** Hayne, D.: C; ***Euphrasia stricta*** D. Wolff. et Host., D.: C; ***Lathraea squamaria*** L., D.: **5,** 2b, 6b; ***Linaria genistifolia*** (L.) Miller, D.: 2a; ***Linaria vulgaris*** Mill., D.: C; ***Melampyrum bihariense*** Kern., D.: **5**, 2a, 2b; ***Melampyrum cristatum*** L., D.: **33,** 2a, 4a; ***Melampyrum nemorosum*** L., D.: **26**, 1b, 3a, 7, 14; ***Melampyrum pratense*** L., D.: **33, 5;** ***Melampyrum saxosum*** Baumg., D.: **33**; ***Melampyrum silvaticum*** L., D.: **33,** 7; ***Rhinanthus minor*** L., D.: **5**, C; ***Rhinanthus rumelicus*** Vellen., D.: **33**, C; ***Rhinanthus serotinus*** (Schönh.) Oborny, D.: **5**, C; ***Scrophularia nodosa*** L., D.: **33, 26**, 1b, 1b, 4a, 7, 10a, 14a; ***Verbascum phlomoides*** L., D.: C; ***Verbascum thapsus*** L., D.: 1c, 2a, 2b, 3, 6, 9, 12; ***Veronica chamaedrys*** L., D.: C; ***Veronica officinalis*** , D.: 2a, 4b, 7; ***Veronica opaca*** Fries, D.: 1, 2, 6, 10, 13, 14; ***Veronica orchidea*** Cr., D.: C; ***Veronica persica*** Poir., D.: 1b, 2a, 2b; ***Veronica persica*** Poiret, D.: C; ***Veronica teucrium*** L., D.: C; **FAM. CAMPANULACEAE:** ***Campanula cervicaria*** L., D.: **33;** ***Campanula glomerata*** L., D.: **33, 5;** ***Campanula napuligera*** Schur, D.: **33, 5;** ***Campanula patula*** L., D.: **33, 5, 8,** C; ***Campanula persicifolia*** L., D.: **33, 5**, C; ***Campanula rapunculoides*** L., D.: **26**, 1b, 3a, 6a, 6b, 9, 11, 12b; ***Campanula trachelium*** L., D.: 2a, 3a, 7, 10a, 13a; ***Phyteuma orbiculare*** L., D.: 6b; **FAM. RUBIACEAE:** ***Asperula cynanchica*** L., D.: C; ***Asperula odorata*** L., D.: **5, 26,** C; ***Galium aparine*** L., D.: **33, 26**, C; ***Galium cruciata*** (L.) Scop., D.: **5,** C; ?***Galium debile*** Desv., D.: **33**; ***Galium mollugo*** L., D.: **33,** C; ***Galium palustre*** L., D.: **33,** 3, 6, 10, 12; ***Galium pumillum*** Murray, D.: **33**; ***Galium rotundifolium*** L., D.: **33**; ***Galium schultessii*** Vest.,D.: **33, 26**, C; ***Galium sylvaticum*** L., D.: **26;** ***Galium verum*** L., D.: **5, 8, 33,** C; **FAM. CAPRIFOLIACEAE:** ***Sambucus ebulus*** L., D.: **33,** C; ***Sambucus nigra*** L., D.: **33**, **26,** C ant sometimes cult.; ***Sambucus racemosa*** L., D.: **33, 5;** ***Viburnum lantana*** L., D.: 1a, 1c, 2a, 2b, 10, 12, 14; ***Viburnum opulus*** L., D.: 2a, 12; **FAM. VALERIANACEAE:** ***Valeriana officinalis*** L., D.: **33**, 2a, 2b; **FAM. DIPSACACEAE:** ***Dipsacus lacineatus*** L., D.: C; ***Knautia arvensis*** (L.) Coulter, D.: **33, 5**, C; ***Scabiosa ochroleuca*** L., D.: 1a, 2a, 4a, 7, 12c; **FAM. ASTERACEAE:** ***Achillea collina*** J. Becker., D.: **33,** 2a, 2c; ***Achillea milleifolium*** L., D.: **8, 48, 32, 5, 26, 32,** C; ***Achillea setacea*** Waldst. et Kit, D.: **32, 5,** 1a, 1b, 1c, 2a, 2b; ***Antennaria dioica*** (L.)Gaertner, D.: **33, 5,** 10a; ***Anthemis macrantha*** Heuffell, D.: **14, 38;** ***Anthemis tinctoria*** L., D.: **14, 8, 33,** 2a, 3a, 4, 8, 9; ***Anthemis tinctoria*** ssp. *tinctoria* L., D.: **33, 5,** 1d, 2a, 4a; ***Arctium lappa*** L., D.: **33,** C; ***Arctium tomentosum Miller***, D.: C; ***Artemisia absinthium*** L., D.: **26;** ***Artemisia annua*** L, D.:1, 2; ***Artemisia campestris*** L., D.: **5;** ***Artemisia vulgaris*** L., D.: C; ***Aster amellus*** L., D.: **14,** 2b, 10, 12a; ***Aster linosyris*** (L.) Beauh., D.: **38**; ***Bellis perennis*** L., D.: **8, 5,** C; ***Bidens tripartita*** L., D.: **14,** 1, 3, 6, 7, 20, 12a; ***Carduus acanthoides*** L., D.: C; ***Carduus kerneri*** Simonkai, D.:1a, 7, 13; ***Carduus personata*** (L.) Jacq., D.: 3a, 6a, 6b, 11; ***Carlina vulgaris*** L., D.:2a, 2b, 5; ***Centaurea austriaca*** Willd, D.: C; ***Centaurea cyanus*** L., D.: **5,** 1, 2; ***Centaurea rhenana*** Boreau , D.:12a; ***Chamomilla recutita*** (L.) Rauschert, D.: **5,** C; ***Chamomilla suaveolens*** (Pursh)Rydb., D.: C; ***Chondrilla juncea*** L., D.: 1b, 2b, 5; ***Chrysanthemum leucanthemum*** L., D.:**8, 5,** C; ***Cichorium inthybus*** L., D.: **5,** C; ***Cirsium arvense*** (L.) Scop., D.: **33, 5,** C; ***Cirsium lanceolatum*** (L.) Scop, D.: C; ***Cirsium vulgare*** (Savi) Ten., D.:7; ***Crepis biennis*** L., D.: **33,** 1a, 1c, 5, 7, 12; ***Crepis setosa*** Haller fil. D.: **33,** 2b, 8, 9, 14; ***Erigeron acris*** L.; D.: **8,** 10a, 12b; ***Erigeron canadensis*** L., D.: C; ***Eupatorium cannabinum*** L., D.: **33, 8,** 1c, 3a, 6a, 8, 14; ***Filago arvensis*** L., D.: **5, 26,** 7, 10a; ***Galinsoga parviflora*** Cav., D.: **5,** C; ***Gnaphalium sylvaticum*** L., D.: **33, 26,** 3a,6b, 10a, 12c; ***Hieracium bauhini*** Besser, D.: **33;** ***Hieracium bifidum*** Kit. ex Horneum., D.: **33;** ***Hieracium lachenalii*** C. C. Gmelin, D.: **26;** ***Hieracium pilosela*** L., D.: **8, 33,** 1a, 4b, 6a, 10a; ***Hieracium sabaudum*** L., D.: **33;** ***Hieracium transsilvanicum*** Heuffel, D.: **5, 33,** C; ***Hieracium umbellatum*** L., D.: **33;** ***Hypochoeris maculata*** L., D.: **8;** ***Hypochoeris uniflora*** Vill., D.: **33;** ***Inula britanica*** L., D.: **8,** C; ***Inula helenium*** L., D.: **33,** 1a, 2a, 2b; ***Iva xanthifolia*** Nutt., D.:1, 2, 12; ***Jurinea arachnoidea*** Bunge, D.: 2a, 2b; ***Lactuca serriola*** L., D.: 2a; ***Lappa major*** Gäertn., D.: C; ***Lapsana communis*** L., D.:**5, 26, 33**, 1b, 3, 5, 6a, 7, 8, 9; ***Leontodon asper*** (Walds. et Kit.) Poiret non Forskal, D.:**33;** ***Leontodon autumnalis*** ssp. *autumnalis*, D.: **33;**

Leontodon hispidus ssp. *hispidus* L., D.: **33, 5;** ***Matricaria perforata*** Mérat, D.: C; ***Mycelis muralis*** (L.) Dumort., D.: **33, 5, 26,** C; ***Onopordon acanthium*** L., D.: C; ***Petasites albus*** (L.) Gaertner, D.: **33;** ***Petasites hybridus*** (L.)P.Gaertner, D.: 4b, 6a, 6b, 7, 12 c; ***Senecio jacobea*** L., D.: **33, 8, 5**, C în pajişti; ***Senecio vernalis*** W. et K., D.: **5,** 1a, 1b, 1c, 2a, 5; ***Silybum marianum*** (L.) Gaertner, D.: **14;** ***Solidago canadensis*** L., D.: C; ***Solidago virgaurea*** L., D.: **26,** 8; ***Sonchus arvensis*** L., D.: C; ***Sonchus oleraceus*** L., D.: **5,** 3a, 6b, 11; ***Tanacetum vulgare*** L., D.: **33,** 3, 6, 7, 12; ***Taraxacum officinale*** Weber; D.: **5;** C; ***Telekia speciosa*** (Schreber) Baumg., D.: **33,** 3a,6b, 11, 12b, 14a; ***Tragopogon dubius*** Scop., D.: C; ***Tragopogon pratensis*** L., D.: **5,** 2, 3, 8, 13; ***Tussilago farfara*** L.; ***Xanthium riparium*** Itzigsohn et Hertsch, D.: C; ***Xanthium spinosum*** L., D.:C;**LILIATAE (MONOCOTYLEDONATAE)FAM. ALISMACEAE:** ***Alisma plantago-aquatica*** L., D.: **26,** 1a, 3, 4, 7, 10, 13; **FAM. BUTOMACEAE:** ***Butomus umbellatus*** L., D.: **26,** 12, 13 14; **FAM. POTAMOGETONACEAE:** ***Potamogeton crispus*** L., D.: **26;** ***Potamogeton pectinatus*** L., D.: **26;** ***Potamogeton trichoides*** Cham. et Schlecht., D.: **26; FAM. TRILLACEAE:** ***Paris quadrifolia*** L., D.: **33, 5**, 6b, 11; **FAM. LILIACEAE:** ***Asparagus officinalis*** L., D.: 2a; ***Colchicum autumnale*** L, D.: 3a, 4a, 10a, 12b, 14a; ***Convallaria majalis*** L., D.: **5**, 1b, 2b, 6a, 11; ***Gagea pratensis*** (Pers.) Dumort., D.: 1a, 1c, 2b, 5, 9; ***Lilium martagon*** L., D.: **33**, 6b; ***Majanthemum bifolium*** (L.) F. W. Schumidt, D.: **33, 5, 32**, 3, 6b, 7, 11; ***Muscari comosum*** (L.) Miller, D.: 1a, 2b; ***Paris quadrifolia*** L., D.: **33, 5**, 2a, 4b; ***Polygonatum multiflorum*** (L.) All., D.: **5;** ***Polygonatum odoratum*** (Miller) Druce, D.: 1c, 1d, 10a; ***Scilla bifolia*** L., D.: **5**, C; ***Veratrum album*** L., D.: 1d; **FAM. ALLIACEAE:** ***Allium rotundum*** L.; D.: **33**, 4b, 7, 10a; ***Allium sphaerocephalum*** L., D.: **38;** ***Allium ursinum*** L., D.: **5,** C; **FAM. AMARYLLIDACEAE:** ***Galanthus nivalis*** L., D.: **5**, 1a, 2a, 2b; **FAM. IRIDACEAE:** ***Gladiolus imbricatus*** L., D.: 1b, 3a, 6a, 6b, 7, 10a, 14a; **FAM. ORCHIDACEAE:** ***Cephalanthera damasonium*** (Miller) Druce, D.: **33**, 6b, 10a; ***Cephalanthera longifolia*** (L.) Fritsch., D.: **33, 5;** ***Cephalanthera rubra*** (L.) L. C. Richard, D.: 3a, 7; ***Epipactis helleborine*** (L.) Crantz., D.: 1b, 5, 10a, 14a; ***Gymnadenia conopsea*** (L.) R. Br., D.: **33**, 4; ***Listera ovata*** (L.) R. Br., D.: **5**, 6b; ***Neottia nidus-avis*** (L.) L. C. M. Richard, D.: **5**, 3a, 6b, 11, 14a; ***Orchis maculata*** L., D.: **33, 5**, 12b; ***Orchis morio*** L., D.: **5,** 1b, 3a, 10, 13a; ***Platanthera bifolia*** (L.) L. C. M. Rchb., D.: **5, 33**, 1b, 3a, 11; **FAM. JUNCACEAE:** ***Juncus articulatus*** L., D.: 4, 6, 12; ***Juncus bufonius*** L., D.: **5**, 1a, 2a, 5, 8, 10, 12; ***Juncus conglomeratus*** L., D.: 1c, 6a, 6b, 10a, 11, 14a; ***Juncus effusus*** L., D.: **33, 5;** ***Juncus inflexus*** L., D.: **8,** C; ***Luzula campestris*** (L.) D. C., D.: **5**, 1a, 1b, 2a, 2b; ***Luzula luzuloides*** (Lam.) Dandy et Willmott, D.: **5, 26,** C; ***Luzula sylvatica*** (Hudson) Gaudin., D.: **33**, 1d, 14a; **FAM. CYPERACEAE:** ***Bolboschoenus maritimus*** (L.) Palla, D.: **38**, 2a; ***Carex curvula*** All., D.: **33;** ***Carex digitata*** L., D.: **26,** 1c, 1d, 6a, 11; ***Carex distans*** L., D.: **8**, 7; ***Carex hirta*** L., D.: **5**, 1a, 2a; ***Carex montana*** L., D.: **26;** ***Carex pairei*** F. Schultz., D.: **33;** ***Carex pendula*** Hudson, D.: 6a; ***Carex pilosa*** Scop., D.: **26;** ***Carex remota*** L., D.: **33, 5;** ***Carex rostrata*** Stokes, D.: **33;** ***Carex sylvatica*** Hudson, D.: **5, 26;** ***Carex umbrosa*** Host., D.: **26;** ***Carex vulpina*** L., D.: **5;** ***Eleocharis palustris*** (L.) R et Sch., D.: **5, 26**, 1, 5, 10; ***Schoenoplectus tabernaemontani*** (C. C. Gmelin) Palla, D.: **26**, 2a, 12; ***Scirpus sylvaticus*** L.; D.: **26,** 13; **FAM. POACEAE:** ***Agropyron intermedium*** (Host.) Beauv., D.: **26;** ***Agropyron repens*** (L) Beauv., D.: **8, 26**, C; ***Agrostis stolonifera*** L., D.: **8, 26**, C; ***Agrostis tenuis*** Sibth., D.: **33, 5, 26;** ***Alopecurus aequalis*** Sobol., D.: **26,** 2a, 2b, 5, 7, 12; ***Alopecurus pratensis*** L., D.: **8, 32,** C; ***Andropogon ischaemum*** L., D.: **26,** 2a, 2b; ***Anthoxanthum odoratum*** L., D.: **8, 5**, 7, 11; ***Apera spica – venti*** (L.) Beauv, D.: **33, 5**, 2a, 2b, 12; ***Brachypodium pinnatum*** (L.) Beauv., D.:**5;** ***Brachypodium silvaticum*** (Hudson) Beauv., D.: **26,** C; ***Briza media*** L., D.: 1a, 1c, 2b, 4a, 10a, 13a; ***Bromus arvensis*** ssp. *arvensis* L., D.: **14, 33;** ***Bromus hordeaceus*** L., D.: **8, 33;** ***Bromus sterilis*** L., D.: C; ***Calamagrostis arundinacea*** (L) Roth., D.: **26,** 2a, 4, 6, 8, 12; ***Calamagrostis epigeios*** (L.) Roth., D.: **5;** ***Calamagrostis pseudophragmites*** (Haller fil) Koeler, D.: C; ***Cynodon dactylon*** (L.) Pers., D.: **33**, 1a, 2a, 2b; ***Cynosurus cristatus*** L., D.: **8;** ***Dactilys polygama*** Horvát, D.: **26**; ***Dactylis glomerata*** L., D.: **33, 5,** C; ***Deschampsia caespitosa*** (L) Beauv, D.: **33, 5;** ***Deschampsia flexuosa*** (L.) Trin.; D.: 53**, 1d, 14a;** ***Digitaria sanguinalis*** (L.) Scop., D.: 1a, 2a, 2b; ***Echinochloa crus-galli*** (L.) Beauv., D.: C; ***Festuca gigantea*** (L.) Vill., D.: **5, 26;** ***Festuca heterophylla*** Lam, D.: **26;** ***Festuca pratensis*** ssp. *pratensis* Huds., D.: **33;** ***Festuca pseudovina*** Hackel, D.: **33;** ***Festuca rubra*** ssp. *rubra* L., D.: **33, 5;** ***Holcus lanatus*** L., D.: **8;** ***Lolium perenne*** L., D.: **33,** C; ***Melica uniflora*** Retz., D.: **33, 26;** ***Milium effusum*** L., D.: **5, 26**, 1b, 4b, 11; ***Phleum pratense*** L., D.: **33, 8,** C; ***Phragmites australis*** (Cav.) Steudel, D.: **8,** C; ***Poa nemoralis*** L., D.: **33, 5;** ***Poa pratensis*** L., D.: **8,** C; ***Poa trivialis*** L., D.: **5;** ***Setaria glauca*** (L.) Beauv., D.: C; ***Setaria viridis*** (L) Beauv., D.: **5**, 1, 2, 13; ***Sieglingia decumbens*** (L.) Bernh., D.: **26;** ***Typha angustifolia*** L., D.: **26,** C; ***Typha latifolia*** L., D.: **26,** C; ***Vulpia myuros*** (L.) C. C. Gmelin, D.: **33; FAM. LEMNACEAE:** ***Lemna minor*** L.; D.: **33**, C.

The analysis of vascular flora

The present researches refer to the study done during 2008-2009 by collecting and determining biological material, from which a number of 618 taxa of superior plants, belonging to 334 genera and 87 families.

The analysis of bioforms

From the analysis of bioforms (table 1, fig. 1) we can see that 9.71% of the species are ligneous and the rest of 90.29% are herbaceous. The majority of the species belong to Hemicryptophytae (H) – 46.92% which represent the main basis of herbaceous vegetation; they are followed by the annual and biannual Terophytes (Th and TH), totalysing 27.35% in the number of identified species. Geophytes (G) take part with a lower percentage – 10.84%, they constituting the herbaceous carpet of vegetal associations. Phanerophytes occupy the following position with 9.71% (Megaphanerophytes – MM, Microphanerophytes – M and Nanophanerophytes – N). Camephytes (Ch) have a low percentage – 3.4%, similar to Helohidatophytes (HH) – 1.61% and Epiphytes (E) – 0.16%.

We can notice the following facts:

- Annual and biannual plants are predominant in weedy areas;
- Hemicryptophytes are predominant both in the flora of forests and water meadows and also in lawns attesting the stability and oldness of these formations;
- Geophytes were met especially in the forest biotope amd partially in the lawn biotope;

Phanerophytes can be found in the vegetation of forest, water meadows an d shrubs.

Table 1. The statistical analysis of bioforms

Bioforms	Number of species	Percentage (%)
H	290	46.92
H	262	90.34
H-Ch	6	2.06
H(Ch)	3	1.03
H(G)	6	2.06
H-G	6	2.06
H-N	1	0.35
H-TH	1	0.35
H-HH	5	1.72
G	67	10.84
G	59	88.06
G(H)	4	5.97
G-H	1	1.49
G(HH)	3	4.48
Ch	21	3.4
Ch	13	61.90
Ch (H)	3	14.28
Ch-H	1	4.76
Ch-N	2	9.52
Ch (N)	2	9.52
Th	148	23.95
Th	126	85.13
Th (TH, H)	1	0.97
Th(TH)	9	6.08
Th-H	2	1.25
Th-TH	9	6.08
Th-TH-H	1	0.67
MM	28	4.53
MM	18	85.71
M(MM)	1	4.76
M-MM	2	9.52
HH	10	1.,61
HH	9	90
HH-G	1	10
TH	21	3.,4
TH	16	3.4
TH-H	4	19.04
TH(H)	1	4.76
E	1	0.16
N	11	1.78
N	9	81.81
N-E	2	18.18

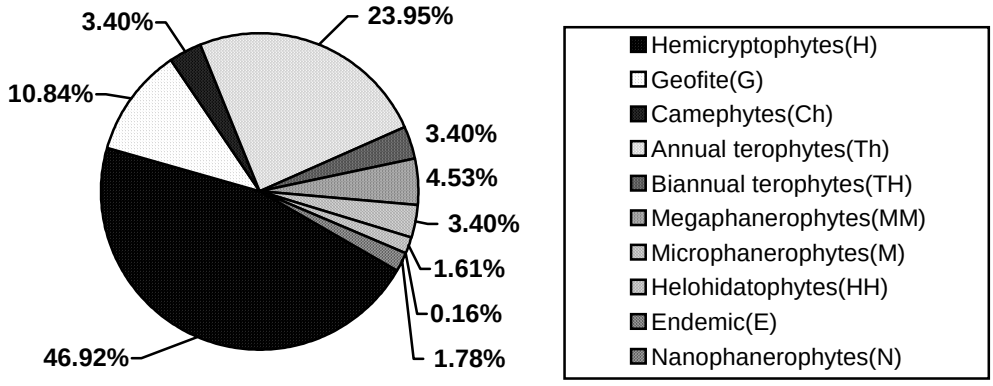

Fig. 1. The spectrum of bioforms in Berzunți Mountains

The analysis of floristical elements

From the analysis of geoelements (table 2, fig. 2) it results the fact that the overwhelming majority of floristic biofund in Berzunţi Mountains is represented by northern species – 79.28% of which: Eurasian (Eua) – 44.66% demonstrate that the researched area belongs to the Eurasian domain; European (Eur) – 16.01% and Central-European (Euc) – 8.57% underline the Europeam character of the species, the circumpolar ones (Circ) – 8.25% and alpine (Alp) – 0.64% are elements specific to cold climate.

This great percentage of northern species appears as a consequence of the geographical position of the researched area, which points to a large expansion and ecological amplitude.

The northern character of flora is underlined too by the short percentage of southern species (5.01%) largely inferior to the average of Romanian flora (17%) and also underlined by the percentage of southern species in Bacău County (7.6%), a fact justifying both the geographical position and the average altitude of 400-500 m.

Of the 99 species belonging to the European geoelement, 84 are strictly European, 10 Mediterranean-European, 3 Continental-European; to them being added 53 Central European species of which 34 are strictly Central European and 13 Mediterranean-Central European.

The termophile elements (Mediterranean – Med, Pontic – Pont) are represented by 33 species (5.33%). The autochthonous species (endemical – End, dacian – Dac) have a percentage of 1.13%.

The percentage of adventive species (4.54%) and cosmopolite (1.93%), almost double than the country average (5%) is due to the presence of numerous weeds, considering the fact that approximately 30% of the total territory is represented by cultivated fields, ruderal species, roads etc.

The analysis of species found in the Lista Roşie a plantelor superioare din România (Red List of superior plants in Romania)

According to the data offered by Oltean M. et all (30) in the floristical conspect in the researched area there can be found, in various periclitation degrees, a number of 19 species of vascular plants both mentioned in the studied bibliography and observed in the Red List.

Table 2. The statistical analysis of floristical elements

Floristical elements	Number of species	Percentage (%)
Oriental or continental pontic elements	20	3.23
Pont	3	15
Pont- Med	11	55
Pont- Balc	2	10
Pont-pan	1	5
Pont- pan- Balc	2	10
Pan	1	5
Southern and endemic elements	31	5.01
Med	7	22.58
Med- Cosm	2	6.45
Med- Circ	2	6.45
Med- Euc	3	9.68
Dac-Balc	1	3.22
Carp-Balc	4	12.90
Carp-End	3	9.68
Carp-Balc-Cauc-Anat	1	3.22
End	1	3.22
End-Carp	2	6.45
Balc	4	12.90
Balc-Pan	1	3.22
Northern elements	490	79.28
Circ	51	10.40
Eur	84	17.14
Eur- Cont	3	0.61
Eur (Med)	10	2.04
Eur (Mont)	2	0.40
Euc	34	6.93
Euc (Mont)	2	0.40
Euc(Med)	13	2.65
Euc- Med	4	0.81
Eua	221	45.10
Eua (Med)	29	5.91
Eua (Cont)	23	4.69
Eua (Mont)	2	0.40
Eua- Cosm	1	0.20
Alp- Carp-Balc	1	0.20
Alp- Carp	1	0.20
Alp- Eur	1	0.20
Arct (Alp)	1	0.20
Atl- Med- Euc	2	0,40
Atl-Med	4	0,81
Atl-Eur	1	0,20
Cosmopolite	49	7.93
Cosm propriu-zise	48	97.96
Cosm (Med)	1	2.04
Adv	28	4.54
Adv propriu-zise	26	92.86
Adv (Eua)	1	3.57
Adv (Eua- Cont)	1	3.57

The 19 species are distributed as it follows: 10 rare species (R) – 1.61% of the total, e.g. *Cephalanthera rubra, Epipactis helleborine, Galium pumilum, Gymnadenia conopsea, Listera ovata, Neotia nidus –avis, Orchis morio, Pinus syivestris, Platanthera bifolia, Potamogeton trichoides*, 1 species (0.16%) with an endangered European areal (BE): *Anthemis macrantha*, 1 species (0.16%) with rare European areal (B/R), 1 species (0.16%) vulnerable / rare (V/R): *Taxus baccata*, 1 species (0.16%) insufficiently known (K): *Galium sylvaticum*, 2 species (0.32%): rare subendemic (bR), *Gentiana cruciata* ssp *phlogifolia*, *melampyrum saxosum* and 3 species not in danger (nt): *Cephalantera damasonium, Cephalantera longifolia* and *Galanthus nivalis*.

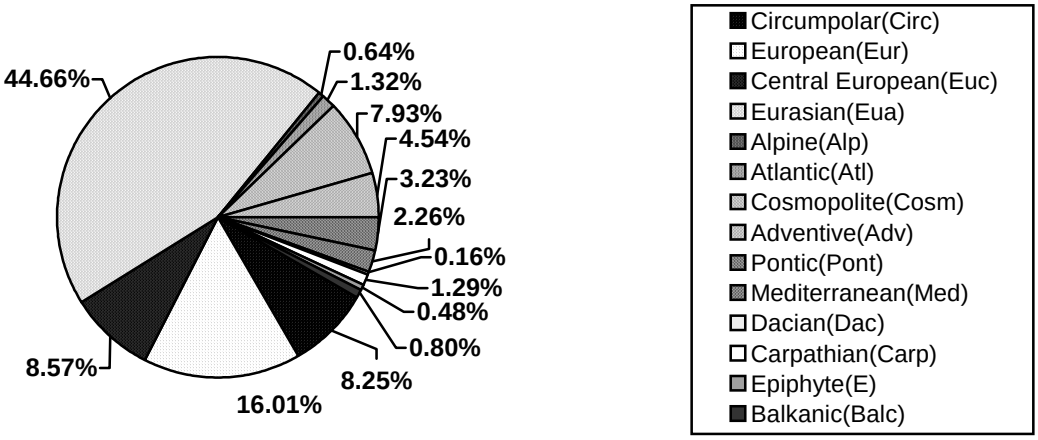

Fig. 2. The spectrum of floristical elements in Berzunți Mountains

CONCLUSIONS

The researched territory, the Berzunți Mountains in Bacău County, has its first floristical study. Following the period of research upon the flora, we underline the presence of 618 species belonging to 334 genera and 87 families. From the analysis of bioforms, it results the fact that the main fund of herbaceous vegetation is represented by Hemicryptophytes (46.92%), which illustrates the existence of a moderate climate of hill and plateau.

From the analysis of floristical elements it can be noticed the dominance of northern species as a consequence of the geographical position of the researched area.

Analysing the species in the „Red List", one can notice a number of 19 species in various degrees of threat, a fact which demonstrates that this number is relatively small in comparison to the total number of species.

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ABSTRACT

The research of Cormophytae flora in the Berzunți Mountains is part of a comprehensive study which will be presented *in extenso* in the form of a doctoral thesis, which explains our presenting only a partial botanical study. The research of flora was limited only to the study of Cormophytae. This paper is the first floristical note in a monographical study about the flora and vegetation of Cormophytae in the Berzunți Mountains, Bacău County. We present the systematical conspect of vascular flora, we make an analysis of bioforms and floristical elements of Cormophytae and also a brief analysis of the species included in the „Red List" of superior plants in Romania.

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